

Appl. No. 09/734,275
Amdt. Dated February 18, 2004
Reply to Office Action of November 18, 2003

Attorney Docket No. 81863.0007
Customer No.: 26021

REMARKS/ARGUMENTS:

Claims 1-4 are pending in the application. Reexamination and reconsideration of the application, in view of the following remarks, are respectfully requested.

The present invention relates to a cutting member such as a cutting tool, made of a high-strength and high-toughness tungsten carbide (WC) cemented carbide which has high wear resistance and high plastic deformation resistance and is particularly suited for cutting hardly machinable materials such as stainless steel which is hard to machine. (Applicant's specification, at p. 1, lines 4-9).

CLAIM REJECTIONS UNDER 35 U.S.C. § 112:

Claims 1-4 stand rejected under 35 U.S.C. § 112, first paragraph as based on a disclosure which is not enabling. Applicant respectfully traverses this rejection.

The Office states, "The amount of a solid solution having a high Zr or Nb is critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure." The Applicant respectfully disagrees. The Applicant's specification states that "The solid solution having a high Nb or Zr content is a solid solution having a peak intensity of Nb or Zr, which is 50% or more, preferably 50-120% of a peak intensity of W, in energy-dispersive X-ray diffraction." (Applicant's specification, at p. 5, line 24-p. 6, line 2). Therefore, the term "high" is defined as being the amount of Nb or Zr that produces a peak intensity which is 50% or more of a peak intensity of W. Given this definition, a person of ordinary skill in the art would be able to determine the quantity of Nb or Zr necessary to produce this peak intensity. Consequently, claims 1-4 are enabled by the disclosure. Withdrawal of this rejection is thus respectfully requested.

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CLAIM REJECTIONS UNDER 35 U.S.C. § 102:

Claims 1-4 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Ichikawa et al. U.S. Patent No. 6,207,262. The Applicant respectfully traverses the rejection. Claim 1 is as follows.

A cutting member comprising:

WC having precipitated therein two or more solid solutions of WC and compounds selected from the group consisting of carbides, nitrides and carbonitrides of metals of group 4a, 5a, and 6a in the Periodic Table; and at least one metal of the iron group,

wherein at least one of the two or more solid solutions is a solid solution having high Nb or Zr content.

Applicant respectfully submits that Ichikawa cannot anticipate claim 1, because Ichikawa fails to teach WC having precipitated therein two or more solid solutions.

In Table 2 of Ichikawa, type p (compound of group 4a, 5a, 6a, i.e., (Zr, Nb) N:1.2wt%, and NbN:0.3wt%), and type w (compound of group 4a, 5a, 6a, i.e., (Ti, Zr) C:0.4wt%, and ZrN:0.1wt%), nitride is contained. In the case of the cemented carbide (hard metal) containing nitride, it is well known that a β -free layer is formed. In the inner side of the β -free layer, nitrogen remains in the state of dissolved into Co, and solubility is small. Therefore, the amount of carbon in Co becomes low, and the amount of dissolution of other compounds of group 4a, 5a and 6a also decreases, and consequently, dissolution and deposition are depressed. Since grain growth of solid solution is depressed, it is a fine and uniform β layer. Therefore, two or more solid solutions are not formed.

In light of the foregoing, Applicant respectfully submits that Ichikawa could not have anticipated or rendered obvious claim 1, because Ichikawa fails to teach or

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suggest each and every claim limitation. Claims 2-4 depend from claim 1 and cannot be anticipated or rendered obvious for at least the same reasons as claim 1. Withdrawal of these rejections is thus respectfully requested.

Claims 1-4 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Mitsubishi Material (JP 11277304). The Applicant respectfully traverses the rejection.

Applicant respectfully submits that JP 11277304 cannot anticipate claim 1, because JP 11277304 fails to teach WC having precipitated therein two or more solid solutions.

In Table 2 of JP11277304 each of type g (compounds of group 4a, 5a and 6a, i.e., TaC:0.5wt%, and ZrN: 2.5wt%), and type r (compounds of group 4a, 5a, 6a, i.e., TiCN:0.2wt%, and TaC:0.2wt%, NbC:0.1wt%, and ZrN:4.5wt%) contain s nitride. Therefore, two or more solid solutions are not formed.

In light of the foregoing, Applicant respectfully submits that JP 11277304 could not have anticipated or rendered obvious claim 1, because JP 11277304 fails to teach or suggest each and every claim limitation. Claims 2-4 depend from claim 1 and cannot be anticipated or rendered obvious for at least the same reasons as claim 1. Withdrawal of these rejections is thus respectfully requested.

Claims 1-4 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Mitsubishi Material (JP 10287947 or 10225804). The Applicant respectfully traverses the rejection.

In Table 2 of JP 10287947 or 10225804 each of type b (compounds of group 4a, 5a and 6a, i.e., TaC:3wt%, ZrC:1wt% and ZrN:1.5wt%) and type e (compounds of group 4a, 5a and 6a, i.e., ZrC:2wt%, HfC:0.5wt% and CN(Ti, W):5wt%) contains nitride. Therefore, two or more solid solutions are not formed.

In light of the foregoing, Applicant respectfully submits that neither JP 10287947 nor JP 10225804 could have anticipated or rendered obvious claim 1,

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because neither reference teaches or suggests each and every claim limitation. Claims 2-4 depend from claim 1 and cannot be anticipated or rendered obvious for at least the same reasons as claim 1. Withdrawal of these rejections is thus respectfully requested.

Claims 1-4 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Yoshimura (U.S. Patent No. 5,447,549) or Fujimori et al. (U.S. Patent No. 4,279,651). The Applicant respectfully traverses the rejection.

Applicant respectfully submits that neither Yoshimura nor Fujimori can anticipate claim 1, because neither reference teaches WC having precipitated therein two or more solid solutions.

Yoshimura merely discloses a cermet, which is not related to the present invention. Yoshimura has no teaching or suggestion whatsoever of WC having precipitated therein two or more solid solutions.

Fujimori teaches compounds of group 4a, 5a, and 6a i.e., $(\text{Ti}_{0.5}\text{W}_{0.5})\text{C}$:4.0wt%, NbC :5wt% that do not dissolve and deposit, because $(\text{Ti}_{0.5}\text{W}_{0.5})\text{C}$ is a composite compound, and is specially processed to composite-form in the stage of materials. Therefore, two or more solid solutions are not deposited.

In light of the foregoing, Applicant respectfully submits that neither Yoshimura nor Fujimori could have anticipated or rendered obvious claim 1, because neither reference teaches or suggests each and every claim limitation. Claims 2-4 depend from claim 1 and cannot be anticipated or rendered obvious for at least the same reasons as claim 1. Withdrawal of these rejections is thus respectfully requested.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

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If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 337-6810 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,

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Date: February 18, 2004

By: 

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